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July 13, 2001

TO: Internal Files

THRU: Peter H. Hess, Sr. Reclamation Specialist, Team Lead PHH bygm

FROM: Michael J. Suflita, Sr. Reclamation Specialist, Hydrology MJS

RE: MRP Sec. 5 & Exhibits 13 & 17, Revised Reclamation Plan, Plateau Mining Corporation, Willow Creek Mine, C/007/038-AM01B

SUMMARY:

On February 12, 2001, the Division received amendment AM01B, a revised reclamation plan for the entire Willow Creek Mine. This Technical Memo is a review of the Hydrologic aspects of that submittal. There are deficiencies.

TECHNICAL ANALYSIS:

RECLAMATION PLAN

HYDROLOGIC INFORMATION

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

Minimum Regulatory Requirements:

Hydrologic reclamation plan

The application shall include a plan, with maps and descriptions, indicating how the relevant regulatory requirements will be met. The plan shall be specific to the local hydrologic conditions. It shall contain the steps to be taken during mining and reclamation through bond release to minimize disturbance to the hydrologic balance within the permit and adjacent areas; to prevent material damage outside the permit area; and to meet applicable Federal and State water quality laws and regulations.

The plan shall include the measures to be taken to: avoid acid or toxic drainage; prevent, to the extent possible using the best technology currently available, additional contributions of suspended solids to stream flow; provide water treatment facilities when needed; and control drainage. The plan shall specifically address any potential adverse hydrologic consequences identified in the PHC determination and shall include preventive and remedial measures.

Each application shall contain descriptions, including maps and cross sections, of stream channel diversions and other diversions to be constructed within the proposed permit area to achieve compliance with the performance standards for those structures.

Post-mining rehabilitation of sedimentation ponds, diversions, impoundments, and treatment facilities

Before abandoning a permit area or seeking bond release, the operator shall ensure that all temporary structures are removed and reclaimed, and that all permanent sedimentation ponds, diversions, impoundments, and treatment facilities meet the requirements of this Chapter for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments. The operator shall renovate such structures if necessary to meet the requirements of this Chapter and to conform to the approved reclamation plan.

Analysis:

General

The amendment proposes to revise the Reclamation Plan from a phased, to a single-step plan. Originally, some sediment ponds, ditches, and roads were to be left initially and reclaimed later. This amendment calls for the reclamation of the entire site in one continuous operation. Otherwise, the Reclamation Section of the MRP (Mining and Reclamation Plan) remains the same. The amendment includes revisions to Sections 5.2, 5.3, 5.4, 5.5, Exhibit 13, Appendix H-1, Appendix H-4, and the Bond Estimate. The new Reclamation Plan is considerably simpler than the old one.

The amendment had some typographical mistakes and inconsistencies that need correction. These include:

1) Pg. 5.4-2, "Removal and Reclamation of Sedimentation Ponds and Associated Structures" is crossed out. It's clear these actions will be taken during reclamation so this step needs to be included somewhere in the list.
2) Pg. 5.5-5 indicates, "Straw bale dikes will be installed in accordance with the recommendations of Barfield..." The current edition of Design Hydrology and Sedimentology for Small Catchments, by Barfield has only one reference to straw bales and there are no installation recommendations. However, the currently approved MRP has straw bale installation requirements in Figure 13-12, Silt Fence and Straw-Bale Dike Schematics. These are sufficient.
3) Pg. 5.4-8 indicates, "removal of buried foundations and utilities to at least 2 feet below the design reclaimed surface." Page 5.4-9 indicates, "Concrete slabs or foundations buried in-place will be covered with a minimum of four feet of fill..." These conflicting commitments need to be resolved.
4) Pg. 5.5-2, paragraph four indicates the Willow Creek culvert is a "temporary structure" and "will be removed." Map 21C shows that culvert remaining as a permanent structure in the final reclamation. This conflict needs to be resolved.

5) Pg. 13-35, paragraph 2, indicates Table 13-11 has peak flows for the watershed drainages. The table does not include peak flows. Actually, those flows are given elsewhere and need not be referenced in the text at that point.
6) Pg. EX13-36 indicates WCRC-1 is a culvert under the railroad tracks. WCRC-4 is shown on Map 21 E as the only culvert under the railroad tracks. Please revise appropriately.
7) Table 13-14 has a footnote "2" in the seventh column. There are no footnotes for the table.

Ground-water monitoring

Ground-water monitoring requirements remain unchanged from that originally approved. See page EX 13-31.

Surface-water monitoring

Surface-water monitoring requirements remain unchanged from that originally approved. See page EX 13-31.

Acid and toxic-forming materials

No changes from the original MRP.

Transfer of wells

No changes from the original MRP.

Discharges into an underground mine

No changes from the original MRP.

Gravity discharges

No changes from the original MRP.

Water quality standards and effluent limitations

No changes from the original MRP.

Diversions

Compared to the current MRP, the new diversions are noticeably shorter and have a more direct path from the drainage area to Willow Creek or the Price River. This arrangement is closer to the original ground configuration and should function more naturally. There is a significant change in the design event used for determining the channel size. The old plan used a 100-year, 6-hour storm and the amendment changes that to a 10-year, 6-hour event. As discussed in paragraphs 742.320 and 742.330 of the regulations, this lesser design event is

soil burial depths. The manufacturer literature would be expected to include design parameters for product use and detailed installation instructions. These would be used for MRP review purposes and for field inspection during installation. The Operator will need to submit such literature with the amendment. In the event the originally submitted product is not available at reclamation time, the new product would need to be re-submitted for Division approval. As always, the Operator is responsible for reclamation success and must achieve that success before bond release. In the event of erosion matting failure, the Operator would be required to repair the failure, possibly including riprapping of the channels.

A conversation with the Operator regarding an erosion control matting named Pyramat, resulted in the Division's review of that product's literature. It appears to have the limitation of insufficient ultraviolet resistance when installed as required in Utah where it takes more than one growing season to establish vegetation. Also, installation of Pyramat with 3 inches of soil would inhibit plant growth.

Stream buffer zones

No changes from the original MRP. The nature of site reclamation requires working in the stream channels and the Division approves those reclamation activities within the Buffer Zone.

Sediment control measures

As shown on Maps 22A and 22B, the new slope configurations are all concave up. This is the Best Technology Currently Available and is a shape that the Division has recently asked Operators to use in their reclamation plans. This shape is closest to natural slopes, and therefore, the most stable. It results in the least erosion and best long-term performance. The Division appreciates the Operator incorporating this design.

The Operator is requested, but not required, to alter the manner in which the reclaimed ground configuration meets the existing ground at the disturbed area boundary. As presently shown, the junction is an acute angle and a ridge is formed that's more easily eroded. If possible, the Operator is encouraged to make the intersection of the reclaimed area meet the existing ground at a more perpendicular angle. This would result in a rounded, and less erodable, configuration. This is at the following locations: 1) WCRD-11, where the contours intersecting stations 1+75 to 2+60 meet the existing ground adjacent to Willow Creek, 2) WCRD- 9A, where the contours intersecting stations 2+50 to 4+00 meet the ground adjacent to Willow Creek, and 3) WRCD-7, where the contours intersecting stations 3+50 to 4+40 meet the ground adjacent to Willow Creek.

Page 5.3-3, as well as other places, refers to using soil preparation methods other than deep gouging and roughening. These other methods may not be as effective in retaining water and limiting erosion than gouging and roughening. They may be better than gouging and roughening. However, Division experience with several other mine sites has shown that gouging and roughening is among the most effective and successful reclamation techniques used in Utah. While the Operator is ultimately responsible for reclamation success, the Division would strongly encourage the use of gouging and roughening to the maximum extent possible.